



May 3, 2021

U.S. Environmental Protection Agency
Ruben Casso
1201 Elm Street
Dallas, TX 75270

RE: Ethylene Oxide Data Request
Indorama Ventures Oxides and Derivatives

Mr. Casso,

Thank you for taking the time to meet with Indorama representatives on May 3rd to review Ethylene Oxide emission data and associated improvement efforts related to the Port Neches facility. As discussed, please find the PDF version of the presentation we gave during the meeting.

We look forward to working with EPA and TCEQ in the future. If you need any additional information or have any questions, please do not hesitate to contact me. I can be reached at 346-365-6130 or kim.knotts@us.indorama.net.

Kind Regards,

A handwritten signature in black ink, appearing to read "Kim Knotts".

Kim Knotts, CSP, CHMM
Director, EHSQ
Indorama Ventures Oxides and Derivatives

Ethylene Oxide Overview – Teleconference with EPA/TCEQ

May 3, 2021

Indorama – Port Neches, TX

Agenda

- Site over-view and operational changes since 2014
- 2014-2020 EO Emissions
- Upset emission event causes
- Time-line of improvements to reduce EO emissions
- LDAR Program Enhancements
- Planned future EO reduction efforts
- Community Involvement/Communication

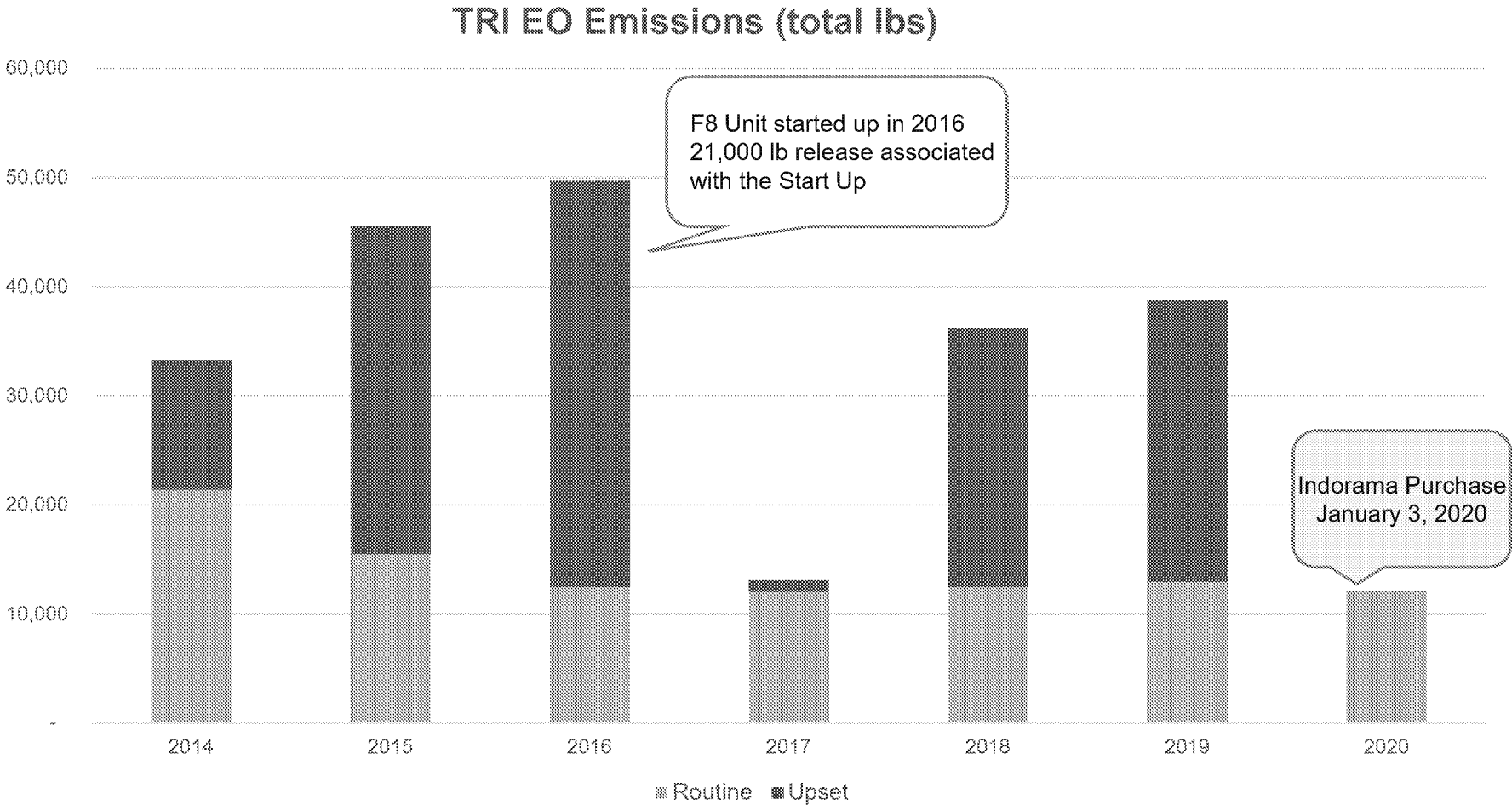
PNO Site Overview



O&O (Oxides & Olefins) Overview



EO Emissions (2014-2020)

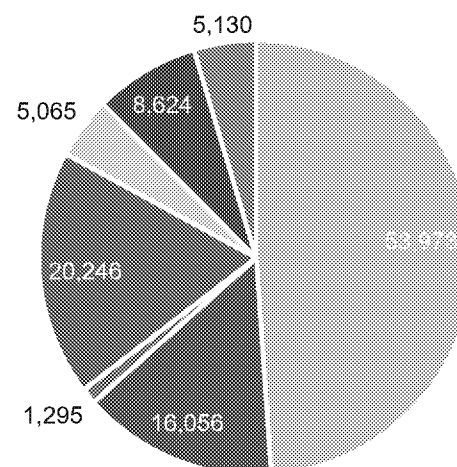


Updates were made to TRI reports for years 2016, 2017, and 2019. Total changes resulted in a 39,000 lb reduction of EO emissions.

EO – RQ History 2014-YTD (Upset Emissions)

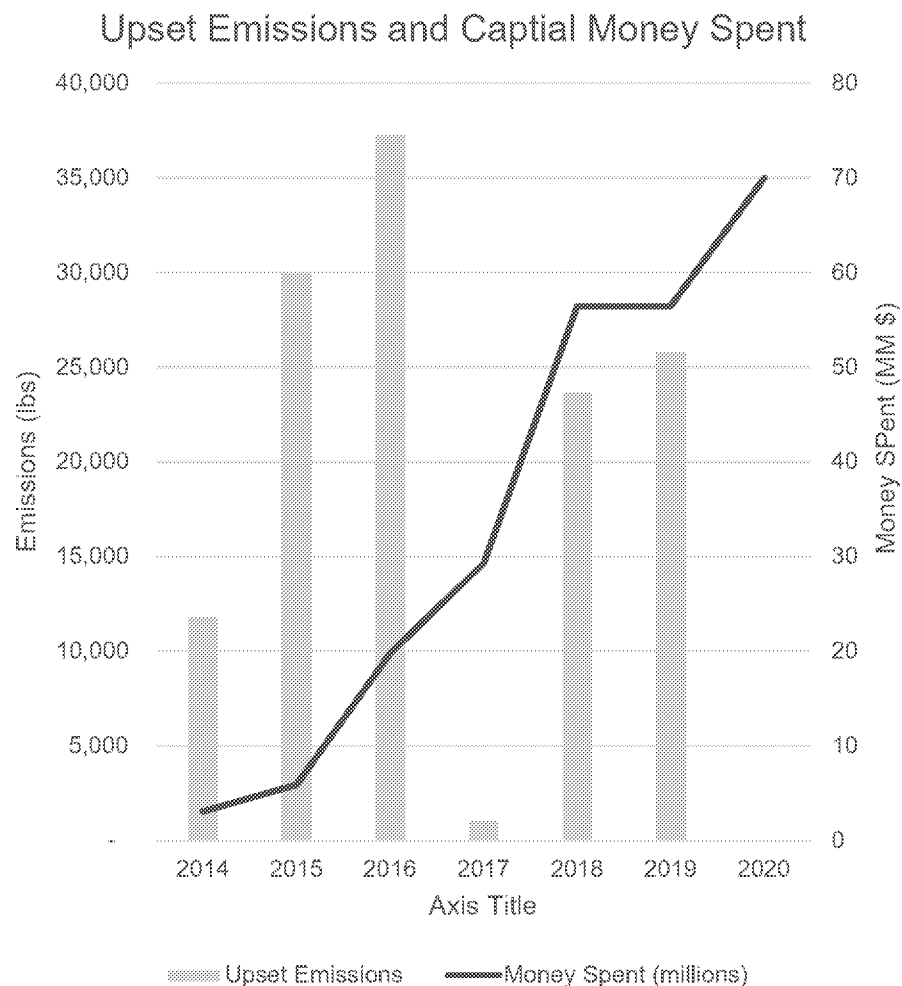
- Reliable electrical power distribution and steam supply (63.4%)
- Pipe & Equipment leaks (22.5%)
- Instruments (8%)

EO Released (lbs)



■ Electrical Failure ■ Steam Loss ■ Other
■ Pipe/Equip Leak ■ Rotating Equipment ■ Instrument
■ Weather

Timeline of Improvements



Year Completed	Benefit Classification	Projects/Improvements
2014	Electrical Reliability	Substation and transformer improvements High voltage Transmission line improvements
	Steam Supply Reliability	Combustion system hardware replacement Boiler Natural Gas line replacement
	Process Improvements	DCS Upgrades AW and COMM module replacement
2015	Steam Supply Reliability	Gas turbine upgrades
2016	Steam Supply Reliability	Replacement of two boilers Replacement of controls on Cogen 1 & 2 Upgrades to Cogen 1
	Process Improvements	F8 process control improvements post start up
2017	Electrical Reliability	Replacement of a substation Improved electrical supply protection
	Steam Supply Reliability	Replacement of combustion hardware on gas turbine Replacement of clarifier charge pump
2018	Electrical Reliability	Replaced one substation and two transformers
	Steam Supply Reliability	Refurbished Cogen 2, rebuild H-K-11
2019	Electrical Reliability	Replaced substation battery string
	Steam Supply Reliability	Replaced Cogen 1 UPS
	Process Improvements	Made several control system changes to reduce the impact to other units when an F or G unit process has an upset or trip
2020	Electrical Reliability	Connected rental RO system to permanent power supply Replacement of substation battery backup system
	Steam Supply Reliability	Rebuilt one boiler

Focused Enhancements to LDAR Program in EO Units

Evaluation of LDAR data and industry best practices has revealed reduction opportunities

Completed

✓ 1,300 lb reduction in calculated EO emissions in 2020

- Monitored components classified as either difficult-to-monitor or under insulation. Now utilizing actual monitoring data in lieu of emission factors.

✓ Improved torquing methods and quality of washers installed on EO reactors and other large equipment

✓ Altered maintenance prioritization to escalate timing to address Delay of Repair (DOR) for certain equipment types

In Progress

✓ Established an LDAR Operational Excellence Team to lead continued focus on EO LDAR program for further emission reductions.

- Found that components <2" have higher leak rates and leak frequency. Now focusing on improved tightening methods.
- Leak trends will be used to improve tightening methods after maintenance work for certain categories of components.

Planned

✓ Considering analytical data collection for stream speciation to replace engineering estimates

✓ Continue to utilize LDAR Operations Excellence Team to identify and drive reduction opportunities

Planned EO Reduction Efforts

- **Advanced Process Controls**
 - Several phases of APC work to be done in the next 3-5 years
 - Improves reliability of units
 - Reduces unit upsets, which reduces unplanned emission events
- **Continued utilization of Risk Based Mechanical Integrity program**
 - Reduces unplanned events due to mechanical integrity failures
 - Basis for annual asset renewal plan
- **Continued improvement to the electrical and steam infrastructure**
 - Renew 004 boiler
 - Continued electrical relay improvements
 - Upgrade 13.8 kV electrical distribution system down to motor control centers
 - Upgrade boiler feed water treatment systems
- **F Units will be going through planned maintenance in 2022/2023**

Port Neches Citizens Advisory Panel

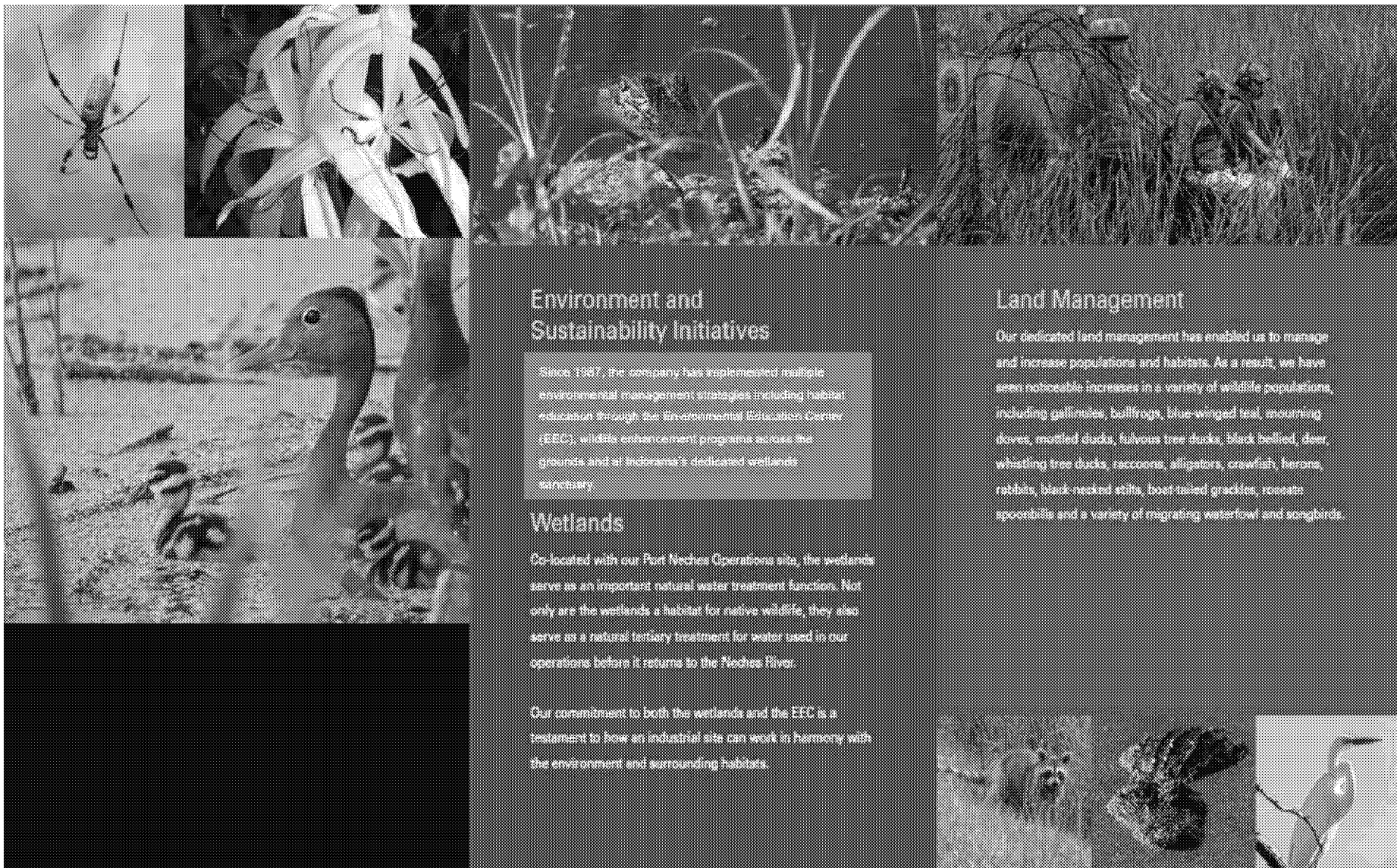
- **Established in the 1990's by Huntsman Petrochemicals** (Previous site owner)
 - Industrial Representation
 - Indorama, TPC, Lion Elastomers, Air Liquide, Ineos
- **Community members**
 - Area Leaders such as the City Manager, Mayors
 - Teachers
 - Small Business Owners
 - Neighboring citizens
 - Retired plant personnel
- **Monthly meetings with summer breaks**
- **Plant Tours**

- **Standing Agenda**
 - Plant updates including:
 - Business status and employment opportunities
 - Major maintenance schedules
 - Review of environmental status
 - Reportable Quantity upsets for both air and water media
 - Permitting updates
 - Review of Safety status
 - Injuries
 - Safety Statistics
 - Safety Initiatives
 - Community Activities such as donations and educational activities

Community Outreach – Environmental Education Center

- **Lamar University – Teaching Environmental Science**
 - We host a class of about 20-30 teachers annually for the Teaching Environmental Science program through Lamar University. We tour them through the JWWTP teaching them about wastewater science, and give them a tour of our wetlands.
- **Environmental Studies Class**
 - Port Neches Groves High school class tours our wetlands/landfarm area. Approximately 60 students per year.
- **Earth Day**
 - In the past we've hosted schools, community members, city council etc. to join us for an Earth Day Activity. Earth day 2019 we hosted 50 people to overview our environmental education center. In 2018, we hosted employee families to tour our wetlands. Prior activities include recycling drives, tree planting, cookouts etc.
- **Texas Master Naturalist – Sabine Chapter**
 - Annually we host TXMN for a wetland ecology class and a tour of our wetlands

Environmental Initiatives



Environment and Sustainability Initiatives

Since 1987, the company has implemented multiple environmental management strategies including habitat education through the Environmental Education Center (EEC), wildlife enhancement programs across the grounds and at Indorama's dedicated wetlands sanctuary.

Wetlands

Co-located with our Port Neches Operations site, the wetlands serve as an important natural water treatment function. Not only are the wetlands a habitat for native wildlife, they also serve as a natural tertiary treatment for water used in our operations before it returns to the Neches River.

Our commitment to both the wetlands and the EEC is a testament to how an industrial site can work in harmony with the environment and surrounding habitats.

Land Management

Our dedicated land management has enabled us to manage and increase populations and habitats. As a result, we have seen noticeable increases in a variety of wildlife populations, including gallinules, bullfrogs, blue-winged teal, mourning doves, mottled ducks, fulvous tree ducks, black bellied, deer, whistling tree ducks, raccoons, alligators, crawfish, herons, rabbits, black necked stilts, boat-tailed grackles, coots, spoonbills and a variety of migrating waterfowl and songbirds.

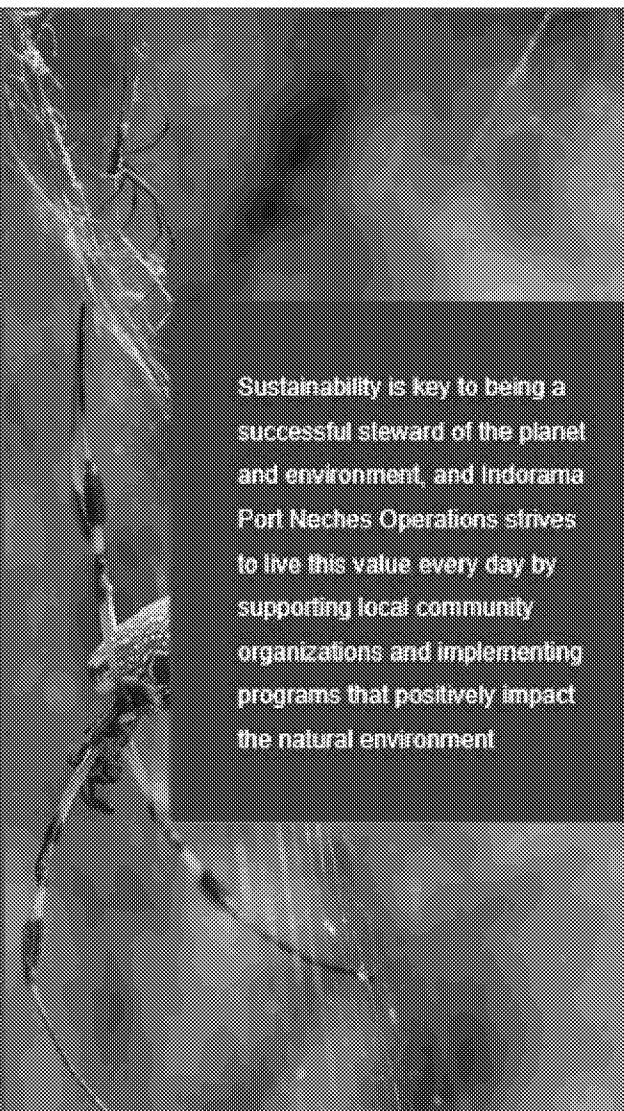
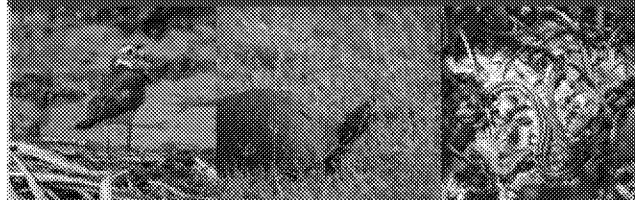
Environmental Initiatives (Cont'd)



Community Partnerships

The ECC is part of Huntaram's commitment to the community to run safe and environmentally friendly operations, advance education, and be a good corporate neighbor. We created the ECC and wildlife enhancement programs to collaborate with community organizations, develop curriculums with local higher education institutions, and protect and support area wildlife habitats.

We have numerous ongoing programs and initiatives at the ECC with various local, regional and state agencies and organizations. On any given day, students and teachers from science, welding, math, and wood shop to government and economic classes are at the ECC, along with representatives from a number of organizations or entities.



Sustainability is key to being a successful steward of the planet and environment, and Indorama Port Neches Operations strives to live this value every day by supporting local community organizations and implementing programs that positively impact the natural environment

Education Partners

Lamar University
Bridge City Independent School District
Port Neches Groves ISD
Nederland Independent School District

Environmental Partners

Audubon Society
Ducks Unlimited
National Waterfowl Alliance
National Wildlife Federation
North American Waterfowl Management
Texas Parks and Wildlife Department
U.S. Fish and Wildlife Service

For More Information:

Please contact Allison Broussard
at
Allison.Broussard@us.indorama.net

Community Communication Pathways

- **Southeast Texas Alerting Network (STAN line)**
 - Flaring activities
 - High noise activities
 - Possible off-site odors
- **Door to door visits**
 - Responding to neighborhood questions and concerns
- **Mailed communications to neighbors**
 - Upcoming maintenance and start up activities
 - Responding to neighborhood questions and concerns
- **CAP Meetings**

Questions?

